State of the art

The invention goes out from an information carrier to the genus of the principal claim. There is in particular for navigation systems in vehicles already information carrier known, stored on which data over a road system and additional travel guide information are too at the road system targets lain. An user of the navigation apparatus must already acquire in ahead this data carrier. The data carriers are not ordered, so that an user, after single road areas, if it z. B. traveled from a field only wants a small part, although and also pay must acquire the entire data. Besides continuous changes in the road system lead to the fact that the data carriers become outdated after short time, so that regular new, expensive data carriers purchased to become to have. The high costs for a large map area, in particular for fields, which an user only right rare drives on, can hold from a regular update of the data carriers, particularly since does not become required of some users a majority of the map data. Furthermore navigation systems are known, with which from service-central road map data or route data become over a radio interface into the vehicle a transmitted. In the service-central the map data current are reproached, so that always current map data are to the user at the disposal. For the data transmission over the radio interface however high charges result, which must be paid with each use.

Advantages of the invention

The information carrier according to invention, the driver information device according to invention and the invention process for de-energising of data with the features of the beside-ordered claims have in contrast to this the advantage that an user can acquire a data carrier, on which already all required data stored are. These data are however encrypted and can only with a suitable key, which is to be paid separate in each case, used become. Thereby the paid user only for those data, which it would like to use also actual. Costs for not required data can become thereby avoided. The data carrier can become therefore inexpensive offered, so that an user can always procure itself for a favorable price a current data carrier. Besides the stimulus of illegal copies of an expensive data carrier becomes avoided, whereby the decoding is made more difficult besides, since the single records and/or program data are protected preferably by separate keys before a decoding in each case. Besides various data, which at present still from price reasons on different information carriers sold to become on a data carrier brought to become, can be available on that these informations after a respective de-energising by the user, insert also without a new data carrier into a reader or have this only to acquire. Thus can besides the selling of data carriers simplified become, since few various data carriers offered to only become to have. Furthermore can be done without a radio transmission of data either to whole or these can a transmission of the keys and/or. if necessary. additional current traffic messages limited become.

By the measures listed in the Unteransprüchen favourable developments and improvements of the

information carrier indicated in the principal claim are possible. It is particularly favourable that the records contain navigation information to the navigation of a vehicle in a road system. In particular with navigation systems, itself on the vehicle environment the relate, is to be considered frequent changes in the road system. With a missing update of the data standing for the order this leads to the fact that the driver must take detours in purchase. On the other hand the assembly of navigation data is very expensive, so that the Kostendeckung for always current data a corresponding high price must become required. As the navigation data can be de-energised depending upon user desire, a realistic price for an use of the current data of the fields desired of the user can become required by an user. Since after short time updated information carriers are already available if necessary, the stimulus for illegal copying of the data carriers becomes besides reduced. In particular, complementary informations, z is favourable. B. to likewise reproach routistic informations, which are accessible over a separate key. Also here an user must spend money only on those informations, which it actual required. Ride it on the other hand spontaneously into a field, to which he would like to have informations, it must not only a data carrier acquire, but can the data desired of it from the vehicle to be de-energised preferably be able.

Furthermore it is favourable that the data carrier program data of the functions of the vehicle and/or functions of the computing device included. Thereby z can. B. an on board computer function to the display of vehicle specifications, an improved engine control or a changed representation in an indicating instrument in a vehicle against a corresponding payment are available. In the respect on the use of the information carrier in a vehicle navigation device is z. B. a so called dynamic navigation, thus a route computation bottom consideration of traffic messages, only after a corresponding de-energising possible.

It is particularly favourable that the data carrier is more writable, so that current informations and/or informations over de-energising on the data carrier direct stored to become to be able. Thereby an already paid de-energising for the apparatus cannot be lost with a failure of the operating apparatus.

, A driver information device, which can access the information carrier to connect with a radio interface, is particularly favourable. Over this radio interface an user knows a key for the decoding of it of the certain, on which information carriers order stored records and/or program data of a service-central, without it must leave the vehicle for this. That becomes transmitted of the service-central a key, the specific for the information carrier and in a prefered embodiment particular for a combination from the requesting apparatus and the information carrier participates particularly favourable applies and only with the particular information carrier and/or. Apparatus a decoding possible. Thereby avoided becomes that the de-energised information carrier or a 1: 1-Kopie of the information carrier in another apparatus used will can.

Furthermore it is favourable that the key applies to the decoding of the associated data only to a predetermined period, which becomes monitored over a real time clock. Thereby the use also temporal can be limited, whereby the price for the user, which can be paid, can become other lowered if necessary.

Furthermore it is favourable that for the order of the key an identity of the user and/or the data carrier and/or the sending apparatus transmitted will, in order to permit to the service-central an identification and if necessary also a calculation.

Drawing

Embodiments of the invention are in the drawing shown and in the subsequent description more near explained. Show

Fig. 1 a driver information device according to invention, which can access an information carrier according to invention, in connection with a service-central,

Fig. 2 an embodiment for a structure of an information carrier according to invention,

Fig. 3 a flow of an invention process for de-energising data.

Description of the embodiment

The information carrier according to invention can become for arbitrary computing devices in vehicles used. So z can. B. Data for the engine management over an information carrier according to invention updated become. By the code with the fact assured can become that these data do not become unauthorized used, but that the appropriate data to a corresponding controller, which fits the respective data transmitted becomes. Own information carrier does not have to become created for each type of controller, but on an information carrier program data and/or records for various controllers can become applied. In particular the use is favourable for driver information devices, since these on the one hand only few interfaces with safety-relevant areas of the vehicle exhibit and are on the other hand the direct contact to a vehicle user for driver information devices particularly large. Thereby also a larger desire, develops the driver information devices, like z on the part of the user. B. the combination instrument, an on board computer, to adapt a Multimediaausgabe or a navigation apparatus to its control desires regarding the outer appearance and the function range. In particular an use for a navigation apparatus is favourable, since the road data, which are to be provided the navigation apparatus for the creation of driving hints for the control of the vehicle in the road system required, on the one hand expensive and on the other hand to right fast become outdated. In the following the invention is explained on the basis the example of a navigation apparatus in a motor vehicle.

In the Fig. 1 is a navigation apparatus 1 shown, which is in a motor vehicle arranged. In the navigation apparatus a computing unit 2 and a working memory 3 arranged are. The navigation apparatus 1 is 4 connected with a display unit, which exhibits a display area 5. In the display area 5 a map display 6 and a control menu are 7 shown with single, selectable menu fields 8, 8 '. Beside the display 5 4 operating elements are 9 arranged at the display unit. Furthermore the navigation apparatus exhibits a detection device 10, which can accomplish a satellite detection over a radio link 11 by Funkkontakt to satellite 12 by means of the government inspection department (global Positioning system) and which can determine position of the vehicle thereby. The computing unit certain with the detection data a position of the vehicle in a road system, determined of the detection unit 10, which is 20 stored on an information carrier. The information carrier 20, which is preferably as CD (compact disc) or a DVD (digital Versatile disc) a performed, is into a data medium drive assembly 19 inserted. The data medium drive assembly is 1 connected with the navigation apparatus. The computing unit 2 calculated bottom aid of the working memory 3 on basis of the road system data a travel route stored on the data carrier 20 a driving goal, entered certain over the detection device 10, by starting position of the vehicle to over the operating elements 9 or over an operation unit 21. Driver's instruction sheets on the basis the certain travel route become over the display area 5 and/or outputted over a speaker 22 to the driver. Over a radio interface 14, z. B. a portable radio telephone or a portable radio interface is more connectable the navigation apparatus 1 over a radio link 15 with a service-central 23. The service-central 23 exhibits a computing unit 24 and a memory unit 25.

Furthermore the service-central is 23 13 connected with a calculation unit.

The navigation apparatus 1 is the preferably rear instrument panel or in the center console of the vehicle arranged. The operation unit 21 and the display unit 6 are at an accessible and visible location good for the driver in the vehicle, thus preferably likewise at that. Center console arranged, so that also a front seat passenger can if necessary make inputs. The display area 5 is preferably performed, so that also by a contact of the operating elements 8, as a liquid crystal display, in particular as a touch-sensitive display area, 8 ', which are in the display area 5 shown, a control of the navigation apparatus 1 can be made. The data are present with it on the information carrier 20 mostly in coded form, which from the navigation apparatus 1 not processed to become to be able, if the computing unit 2 a corresponding key is not present for decoding on the information carrier 20 the stored data. On the information carrier 20 both pure records, z can. B. Data base data records, and program data, thus instructions for the embodiment of programmes stored its. In a free accessible part of the information carrier 20 a directory of the information carrier 20 by means of the data medium drive assembly 19 of the navigation apparatus 1 callable and in the display area 5 is representable. By an input over the operation units an user can start 9,

21 now the decoding of a particular record or a particular program of the data stored on the information carrier 20.

For this a corresponding code is to be entered over the operation unit 21 into the navigation apparatus 1 by the user in a first embodiment. The entered code becomes prefered together with an identification of the data carrier 20 and/or the navigation apparatus 1 to the Datenzentrale 23 transmitted. By the computing device 24 now a key the record selected of the user and/or programme on the information carrier 20 calculated and over the radio link 15 and the radio interface 14 become to the navigation apparatus 1 back-transmitted by access to the memory unit 25. With the help of this key the computing unit 2 can that now the key associated record on the information carrier 20 decode and process. Is this z. B. a record with road system data for a certain geographical or administrative field, then can consider the computing device 2 now the corresponding map data read and for the determination of a travel route. Becomes with the order of the key also an identification of the user, z. B. a credit card number transmitted, then can pass the service-central on 23 an accounting for the corresponding data to the calculation unit 13, which can compute the costs for the data then the user. In an other embodiment also a pre-payment can be by the user made, z. B. in the form of a corresponding Code-Karte with a code number, those before an use z. B. by a abradable printing protected is, those in the memory unit 25 of the service-central 23 stored is and those the user z. B. the unique transmission of a key or a key for a certain money allowed. Furthermore also money can be deducted by a smart card in the vehicle, whereby a radio link is required not necessarily to a service-central here, there an user after empty ones of the smart card, this either again to load must or a new smart card acquire must.

In place of the smart card also a magnetic card or a comparable memory card can become used.

In an other embodiment is also possible that the user procures itself the corresponding keys on other paths, z. B. over the Internet or over a connection with a fixed net or a mobile telephone to a service-central or a service center. Here that gives. Users the desired records and/or program data as well as an identification, z. B. the volume serial number and/or the number of its navigation apparatus by language or keyboard entry on. Thereupon becomes it over the Internet and/or. the mobile telephone a code reported, which it enters then to automatic into the navigation apparatus 1. By the identification no abuse of the transmitted key possible is, there this only for the data carrier and/or. the navigation apparatus or even only for the connection from information carrier 20 and navigation apparatus 1 valid is.

In an other embodiment are also possible that the driver in a selection menu of the display 4 selects one information on the data carrier 20, which can be decoded, and the subsequent procurement of the key automatic without an other input made. For this it is required that the user itself with the purchase of the data carrier and/or. with the first insertion of the data carrier as users let register. Prefered one is the automatic order of keys by a password protected, in order to exclude an unauthorized use.

In a prefered embodiment the information carrier is 20 performed as a rewritable data carrier, whereby becomes 20 stored after unique transmission of a valid key for a certain record and/or certain program data the input of the valid key on the information carrier. Thereby avoided becomes that with a failure of the power supply, z. B. with a battery change of the vehicle, which becomes volatile working memories 3 of the navigation apparatus 1 cleared and thus also the information lost goes, which for a certain record and/or program data charges were already paid. In a preferable embodiment here an identification becomes, z. B. a unit number of the navigation apparatus 1, along-stored, so that the information carrier 20 can become only 1 used in the respective navigation apparatus.

Furthermore the navigation apparatus 1 exhibits a time registration unit 26, preferably a radio clock and/or. a time registration buffered over an accumulator. Thereby is the navigation apparatus 1 the determination of the current time possible. In a preferable embodiment 23 keys can become transmitted by the service-central, which apply only to a certain period. These make a decoding for the computing unit possible 2 a period contained coded in the key by the respective, associated records on the information carrier 20 only for, whereby the current time corresponding by the time registration device 26 is queried.

In the Fig. 2 is an embodiment for on the information carrier 20 stored data for the use in the data medium drive assembly 19 of the navigation apparatus 1 shown. In a first memory area 31 are uncoded data deposited, which serve in particular to represent to an user a selection of encoded data and to make the connection over the radio interface 14 for the service-central 23 as well as a control of the operation unit 21. In particular substantial basic functions are, z. B. an operating system, in the uncoded first area 31 deposited. The remaining portions of the information carrier 20 are coded and permit access of the computing unit 2 only with being present a corresponding key. In a second area 32 map data are coded stored. The map data are arranged thereby according to regions. Here various constellations of keys are possible. Z. B. keys for each single region are possible. Beyond that also keys are possible, which can de-energise direct several regions. For all keys different in each case prices can become fixed.

In the embodiment represented here possible regions are z. B. Germany north DN, Germany south DS, Italy north IT-N, Austria RK, Switzerland CH and the Netherlands NL. In a third area routistic informations are preferably deposited for the areas, 32 stored to which also map data are in the second area. There is z. B. Hotel information 33 ', restaurant information 33 " and references on objects of interest and points of interest 33 '" possible. In a fourth area 34 video informations 34 ' and audio informations are 34 " stored. In a fifth area 35 are other functions of the navigation apparatus stored, which can be de-energised likewise corresponding. Z. B. this can be a dynamic navigation, with by one in the Fig. 1 not represented radio device traffic informations to the navigation apparatus 1 transmitted and during route planning by the computing unit 2 considered become.

In the Fig. 3 is the flow of an invention process shown. An user has an information carrier 20 purchased and would like now the road maps for the north of Germany for the navigation apparatus 1 de-energise to let. After the insertion of the information carrier he selects 20 into the data medium drive assembly 19 over the operation unit 9 and/or. 21 the function of vehicle navigation out. In a reference step 41 the user it is pointed out that so far no map data and/or. the map data are not de-energised by the current vehicle environment. In a subsequent inquiry step 42 the user is asked whether it wants to de-energise the corresponding map data. If this by the user is answered in the negative, then 43 branched become a final step and a navigation support for the desired map area cannot become given. Against it if de-energising the user is affirmed, then 44 branched, in that an user from a menu the records and/or program data selected represented in the display area 5 an input step, become which the user would like to de-energise. In a subsequent identification step 45 a made identification of the user, z. B. by the input of a customer number or the input of an authorizing number, which is an equivalent of the memory unit 25 the service-central associated. In a transmission step 46 the identity of the user, the identity of the information carrier 20, becomes z. B. a volume serial number and/or an identity number of the navigation apparatus 1 to the service-central 23 transmitted. In a preferable embodiment all three informations become transmitted. In a subsequent computation step 47 the corresponding keys for the requested record, thus here for the card Germany north, in the service-central calculated and bottom consideration and inclusion of identification data, becomes thus the volume serial number of the information carrier 20 and a number of the navigation apparatus 1, standing for the order, the z. B. in one in the Fig. 1 nonvolatile memory not shown of the navigation apparatus 1 deposited is, to the navigation apparatus 1 back transmitted. In a subsequent decoding step 48 the data present on the information carrier 20 will be to complete in the second area 32 DN of the Germany north card either or depending upon need into the working memory 3 of the navigation apparatus 1 bottom decoding by means of the transmitted key transmitted and thus for subsequent vehicle navigation at the disposal. In a conclusion step 49 the user displayed becomes that the record desired of him is de-energised now. The corresponding costs will become by the Datenzentrale 23 passed on to the calculation unit 13 and by this the user loaded, z. B. over a credit card load. The key becomes 20 stored on the information carrier, so that also after a removal of the information carrier 20 or after a shutdown of the navigation apparatus 1 the information continues to be available over de-energising.